Space Weather Forecast

Issued on Friday, 05 November 2021 at 12:04 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of Moderate class flares. Slight chance of G1/Minor to G2/Moderate geomagnetic storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: There are three sunspot regions on the visible disc with observed solar activity remaining at Low levels with two Common-class flares over the past 24 hours. The most complex region in the northwest quadrant has faded somewhat, but is still magnetically complex in the largest spot. The region in the northeast quadrant has recently developed a little more complexity. Finally we have a new region which has just rotated onto the southeast limb. This appears reasonably active in imagery and has been responsible for some Common-class flaring already. It is difficult to classify this close to the limb, but currently appears relatively simple, although this may change is it becomes more visible.
No Earth-directed Coronal Mass Ejections (CMEs) have been seen in available imagery.

Solar Wind / Geomagnetic Activity: The CME which was observed leaving the Sun early on the 2nd November arrived at Earth around 03/2000 UTC, and over the past 24 hours we have seen a slowly waning influence from this CME.
The solar wind speed slowly declined from strong levels around 700 km/s to elevated levels just below 600 km/s. The total Interplanetary Magnetic Field was moderate to strong at first, before declining after 05/0400 UTC to be at weak to moderate levels. The north-south component was weakly southward directed at the start of the period, but soon became firmly northward directed. Geomagnetic activity has been Quiet to Unsettled (Kp 1-3), with a G1/Minor Storm interval 04/1200-1500 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained slightly elevated above background levels, but below the threshold for a radiation storm.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to remain mainly Low through the next four days, but with a continuing slight chance of Moderate class flares.

Solar Wind / Geomagnetic Activity: Solar wind speeds are expected to ease over the next two days as the CME effects wane. However, elevated wind speeds are likely on Days 3 into 4 (07-08 Nov) due to a possible connection to the fast wind from a coronal hole, effectively prolonging the increased wind speeds. Predominantly Quiet to Active geomagnetic activity is expected Days 1 to 3 (05-07 Nov), but there is a waning slight chance of further G1/Minor storms through Days 1-3, with a very slight chance of a G2/Moderate storm on Day 1.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain below storm levels, but with just a very slight chance of a radiation storm if further larger flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	20	10	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	15	15	15	15
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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